AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-37. (Cancelled)

38. (New) A method for producing a digital output in a delta-sigma analog-to-digital converter having a variable oversample ratio, the method comprising:

providing an analog delta-sigma modulator to generate a first digital signal from an analog input signal;

decoding the first digital signal into a second digital signal having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter;

filtering the second digital signal to generate a third digital signal; and

generating a digital output from a portion of the third digital signal.

39. (New) The method of claim 38, wherein having a variable oversample ratio comprises having a number of integer oversample ratios ranging from a minimum oversample ratio to a maximum oversample ratio.

40. (New) The method of claim 38, wherein filtering the second digital signal to generate a third digital signal comprises using a digital filter to generate the third

digital signal, the third digital signal comprising a number of bits that is a function of the maximum oversample ratio of the delta-sigma analog-to-digital converter and the digital filter specification.

41. (New) The method of claim 40, wherein the digital filter is a comb filter.

42. (New) The method of claim 41, wherein the comb filter comprises a cascade of integrators and differentiators, wherein the number of integrators and differentiators is a function of the order of the comb filter.

43. (New) The method of claim 42, wherein the integrators comprise the same number of bits as the third digital signal.

44. (New) The method of claim 42, wherein the differentiators comprise the same number of bits as the digital output of the delta-sigma analog-to-digital converter.

45. (New) The method of claim 38, wherein decoding the first digital signal into a second digital signal having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter comprises using a decoder.

46. (New) The method of claim 38, wherein decoding the first digital signal into a second digital signal

having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter comprises using a multiplier.

47. (New) A delta-sigma analog-to-digital converter circuit having a variable oversample ratio, the circuit comprising:

a delta-sigma analog modulator for generating a first digital signal from an analog input signal;

a decoder for decoding the first digital signal into a second digital signal having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter; and

a digital filter for generating a third digital signal from the second digital signal, wherein a portion of the third digital signal provides a digital output for the delta-sigma analog-to-digital converter.

48. (New) The circuit of claim 47, wherein the variable oversample ratio comprises a number of integer oversample ratios ranging from a minimum oversample ratio to a maximum oversample ratio.

49. (New) The circuit of claim 47, wherein the decoder comprises a multiplier.

50. (New) The circuit of claim 47, wherein the number of bits in the third digital signal is a function of the

maximum oversample ratio of the delta-sigma analog-to-digital converter and the digital filter specification.

51. (New) The circuit of claim 47, wherein the digital filter is a comb filter.

52. (New) The circuit of claim 51, wherein the comb filter comprises a cascade of integrators and differentiators, wherein the number of integrators and differentiators is a function of the order of the comb filter.

53. (New) The circuit of claim 52, wherein the integrators comprise the same number of bits as the third digital signal.

54. (New) The circuit of claim 53, wherein the differentiators comprise the same number of bits as the digital output of the delta-sigma analog-to-digital converter.

55. (New) A delta-sigma analog-to-digital converter having a variable oversample ratio, the converter comprising:

means for generating a first digital signal from an analog input;

means for decoding the first digital signal into a second digital signal having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter; and

means for filtering the second digital signal to generate a third digital signal, wherein a portion of the third digital signal provides a digital output for the delta-sigma analog-to-digital converter.

56. (New) The delta-sigma analog-to-digital converter of claim 55, wherein the variable oversample ratio comprises a number of integer oversample ratios ranging from a minimum oversample ratio to a maximum oversample ratio.

57. (New) The delta-sigma analog-to-digital converter of claim 55, wherein the means for generating a first digital signal from an analog input comprises a delta-sigma analog modulator.

58. (New) The delta-sigma analog-to-digital converter of claim 55, wherein the means for decoding the first digital signal into a second digital signal having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter comprises a decoder.

59. (New) The delta-sigma analog-to-digital converter of claim 55, wherein the means for decoding the first digital signal into a second digital signal having a number of bits according to the number of oversample ratios allowed by the delta-sigma analog-to-digital converter comprises a multiplier.

60. (New) The delta-sigma analog-to-digital converter of claim 55, wherein the means for filtering the second digital signal to generate a third digital signal comprises a comb filter.

61. (New) The delta-sigma analog-to-digital converter of claim 60, wherein the comb filter comprises a cascade of integrators and differentiators, wherein the number of integrators and differentiators is a function of the order of the comb filter.

62. (New) The delta-sigma analog-to-digital converter of claim 61, wherein the integrators comprise the same number of bits as the third digital signal.

63. (New) The delta-sigma analog-to-digital converter of claim 61, wherein the differentiators comprise the same number of bits as the digital output of the delta-sigma analog-to-digital converter.

64. (New) The delta-sigma analog-to-digital converter of claim 55, wherein the number of bits in the third digital signal is a function of the maximum oversample ratio of the delta-sigma analog-to-digital converter and the digital filter specification.